Review Comments
Fish Tracking Field Sampling Plan
Dated January 18, 2018
Review Comments dated February 9, 2018

Following are the United States Environmental Protection Agency's (EPA's) comments on the document titled Agency Review Draft *Fish Tracking Field Sampling Plan Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling Portland Harbor Superfund Site* (herein referred to as the FSP) prepared by AECOM Technical Services (AECOM) and Geosyntec Consultants, Inc. (Geosyntec) on behalf of the Portland Harbor Pre-Remedial Design Group (Pre-RD Group). The FSP was prepared to support the fish tracking efforts outlined in the *Pre-Remedial Design Investigation Studies Work Plan* ([PDI Work Plan] Geosyntec 2017).

EPA understands the purpose of the FSP is to describe the work activities for an acoustic fish tracking study of resident smallmouth bass (SMB; *Micropterus dolomieu*) to characterize the seasonal movement and home range of SMB throughout the Portland Harbor Superfund Site (Site). The purpose of EPA's review is to assess if the FSP complies with the objectives of fish tracking described in the PDI Work Plan.

EPA's comments are categorized as "Primary," which identify concerns that must be resolved to achieve the objective; "To Be Considered," which, if addressed or resolved, would reduce uncertainty, improve confidence in the document's conclusions, and/or best support the objectives; and "Matters of Style," which substantially or adversely affect the presentation or understanding of the technical information provided in the document.

Primary Comments

1. General Comment: The revised FSP must provide a quality assurance/quality control (QA/QC) plan to document the performance of the acoustic tracking system consistent with the objectives of the program. If the system is intended to provide information on presence or absence of a fish, then diagnostics and tests need to be collected during the study to ascertain the reliability of the data. Simply knowing the receivers are on is not sufficient. For example, if a fish is not detected in the array, QA/QC procedures need to be able to establish that as a true finding, not a false negative. Similarly, QA/QC approaches are needed to establish the accuracy and precision of location data in the high-resolution arrays. Approaches must include stationary and mobile tag challenges at routine intervals to establish receiver performance. This is particularly true considering the relatively sparse deployment of receivers (see Primary Comment #3). Additionally, the QA/QC plan must document contingencies for possible disruptions to the study.

2. General Comment: There is potential to encounter contaminated sediments during deployment, maintenance, and recovery of the receivers. A health and safety plan (HASP) or addendum specific to the fish tracking activities must be included as an attachment to the FSP. The *Portland Harbor Pre-RD Investigation and Baseline Sampling Programmatic HAZWOPER Health and Safety Plan* (AECOM and Geosyntec 2018a) states that "Because study area-specific sampling locations, methods, media, and other detailed information are to be developed for each study, safety procedures specific to that field study will be documented as an addendum to this Programmatic HASP. Each HASP Addendum will be included as an attachment to the FSP prepared for the proposed field activity." The HASP must cover fish tracking-specific activity hazard analysis, safety and spill equipment, emergency procedures, and contact information.

3. Section 2.2: The receiver deployment array is relatively sparse from a site-wide perspective. This increases the chance that fish will not be "heard," either because the fish resides in the array but is out of range or it has moved beyond the array. The lack of a signal (not "hearing a fish") increases the ambiguity of the result (i.e., it is unknown if the fish is not being heard due to the location of the fish or the limitations of the receivers/array). The revised FSP must explain how the system will indicate directionality and distance from the gates to determine if a fish has left the array and thus is not heard or is within the array and not heard. The different interpretations of the data will provide fundamentally different determinations on SMB residency.

4. Section 2.2, page 4, paragraph 4: The revised FSP must clarify what is meant by the statement "Focusing on the four-mile stretch in the central part of the Site also minimizes potential for tagged fish to leave the study area especially early on in the study."

5. Section 2.3: Instead of specifying a size range, the revised FSP must state that SMB greater than 228 millimeters (9 inches) will be selected for the study.

6. Section 2.4: The revised FSP must state that fish collection will be prioritized within the three target areas (Willamette Cover, Swan Island Lagoon, and river mile 11.5E) to maximize the potential for the high-resolution array to be useful.

7. Section 2.6 and Section 4.6.1: SMB are believed to move to spawning and wintering areas. For the purposes of this study, it would not be useful to collect "in-transit" fish as they cannot be reasonably expected to reside within the tracking area. Pre- or during-

spawn sampling would not provide an appropriate population sample for the purposes of establishing the home range of resident SMB. Fish must be collected post-spawning after they have established summer residence. Local fisheries experts would be best suited to inform specific dates. The revised FSP must include a discussion of the timing of fish collection to avoid the dates when SMB would be in transit to or from spawning areas.

8. Section 4.1, page 8, paragraph 1 and Section 4.6.2, page 11, paragraph 4: The location of the landside surgery station must be identified and described in the final version of the FSP.

9. Section 4.2, page 8, paragraph 4 states, "The AECOM PDI Project Coordinator and/or PDI Project Manager will coordinate with the EPA Project Manager to determine what permit equivalencies are required for this study." The revised FSP must indicate the required permit equivalencies to avoid delays due to the need to obtain permits.

10. Section 4.4: The revised FSP must explain if receiver function would be affected by high turbidity caused by suspension of fine silty material on the river bottom that may occur during high river flows or local disturbances of the river bottom.

11. Section 4.5: There is potential for receivers to be lost or damaged by debris, interaction with boats, vandalism, and theft. The revised FSP must describe the contingency plan for replacement of lost or damaged receivers.

12. Section 4.6: Fish Collection and Tagging references the various standard operating procedures (SOPs) that are included in Appendix A and associated with these field activities. However, it is unclear which specific SOPs are being referenced in the text and how they will be adhered to. For example, will the contract anglers follow the procedures in *SOP-01 Decontamination*? Additionally, the fish collection SOP is not included in Appendix A while the fish tissue sampling SOP is (*SOP-04 Fish Tissue Sampling*). References to SOPs in this section must call out specific SOPs where referenced (e.g., *SOP-07 Surgical Implantation of Acoustic Tags*), and the fish collection SOP must be included in Appendix A.

13. Section 4.6.1, page 11, paragraph 2: This section states that fish displaying obvious abnormal behavior will be released and not tagged, and also states that the abnormal behavior fish will be sacrificed and retained for potential chemical analysis. This contradiction must be clarified.

To be Considered Comments

1. The revised FSP should explain how the findings of the fish tracking study will be incorporated into the planned fish tissue sampling.

2. Figure 3: Some stations appear to be within proposed U.S. Army Corps of Engineers dredging areas (e.g., PDI-AR-A27). If dredging in these areas is a possibility during the course of the fish tracking study, a contingency plan should be developed to provide alternative receiver placement locations.

3. Appendix B: An overarching field sampling equipment checklist should be included to serve as a single reference for the equipment required to successfully complete this study.

4. Appendix B: The depth to mudline at the capture location should be recorded on the Fish Tracking Field Form as in the Fish Tissue FSP, Appendix B, Specimen Tally and Location form (AECOM and Geosyntec 2018c). Additionally, daily water temperature and flow rate measurements should be obtained and recorded in the field logbook.

5. Section 3.1: Dr. Dan Isermann, University of Wisconsin Stevens Point, should be contacted to provide expert assistance and review of the fish tracking study. Dr. Isermann is one of the nation's foremost experts on SMB tracking in large rivers using the Vemco technologies, which is the specific focus of this project. The revised FSP should include Dr. Isermann's role in the study. If the study is financially constrained, Dr. Isermann could replace the expert review of USACE.

Matters of Style Comments

1. A project team organization chart should be included in the FSP to clarify project team roles and responsibilities. The organization chart should describe the certifications people hold and the work they will perform.

2. Section 2, page 2, paragraph 4: This section states that the project specific data quality objectives (DQOs) and date use objectives (DUOs) are included in Section 1.2 of the FSP and Section 1.3 of the quality assurance project plan ([QAPP] AECOM and Geosyntec 2018b). The DQOs and DUOs are included in Section 1.3 of the FSP and Section 3.2 of the QAPP. These references should be corrected.

3. Section 4.6.4 and Section 6: A reference to specific sections in the fish tissue FSP for baseline tissue sampling should be included and this citation should be listed in the references.

References

AECOM and Geosyntec. 2018a. Programmatic HAZWOPER Health and Safety Plan, Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling, Portland Harbor Superfund Site. January.

———. 2018b. Draft Quality Assurance Project Plan, Portland Harbor Pre-Remedial Design Investigation Studies, Portland Harbor Superfund Site. January.

———. 2018c. Fish Tissue Field Sampling Plan, Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling, Portland Harbor Superfund Site. January.

Geosyntec. 2017. Portland Harbor Pre-Remedial Design Investigation Studies Work Plan. Portland Harbor Superfund Site. December.